CLAIMS

What is claimed is.

1. An article comprising:

a wire-bonding substrate including a first surface and a second surface, wherein the substrate includes at least one of:

a bond finger disposed on the first surface, wherein the bond finger includes a metallization in the substrate, and a metallic surface finish above and on the metallization; and

a land pad for a ball attach on the second surface, wherein the land pad includes a metallization in the substrate, and a metallic surface finish below and on the metallization; and

wherein the metallic surface finish has a higher electrochemical potential than the metallization in the substrate.

2. The article according to claim 1, wherein the metallization is a copper metallization, and wherein the metallic surface finish is selected from gold, gold alloy, silver, silver alloy, platinum, platinum alloy, iridium, iridium alloy, and combinations thereof.

3. The article according to claim 1, wherein the metallic surface finish includes a first plating layer above and on the metallization, and a second plating layer above and on the first plating layer.

4. The article according to claim 1, wherein the metallization is copper, and wherein the metallic surface finish includes a gold first plating layer above and on the metallization, and a gold second plating layer above and on the gold first plating layer.

5. The article according to claim 1, wherein the metallization is copper, and wherein the metallic surface finish includes a first plating layer above and on the metallization and a second plating layer above and on the first plating layer, and wherein the metallic surface finish is in a thickness range from about 0.01 μm to about 10 μm.

6. The article according to claim 1, wherein the metallization is copper, and wherein the metallic surface finish includes:

a first plating layer above and on the metallization, wherein the first plating layer is selected from gold, gold alloy, silver, silver alloy, platinum, platinum alloy, iridium, iridium alloy, and combinations thereof; and

a second plating layer above and on the first plating layer, wherein the second plating layer includes an equal or higher electrochemical potential than the first plating layer, and wherein the metallic surface finish is in a thickness range from about 0.01 μm to about 10 μm.

7. The article according to claim 1, wherein the metallization is copper, and wherein the metallic surface finish includes:

a gold first plating layer above and on the metallization; and

a gold second plating layer above and on the first plating layer, and wherein the metallic surface finish is in a thickness range from about 0.01 μm to about 10 μm.

8. The article according to claim 1, wherein the metallization is copper, and wherein the metallic surface finish includes:

a first plating layer above and on the metallization, wherein the first plating layer is selected from gold, gold alloy, silver, silver alloy, platinum, platinum alloy, iridium, iridium alloy, and combinations thereof; and

a second plating layer above and on the first plating layer, wherein the second plating layer includes an equal or higher electrochemical

potential than the first plating layer, and wherein the second plating layer is more ductile than the first plating layer.

9. A package comprising:

a wire bonding substrate including a first surface and a second surface, wherein the substrate includes at least one of:

a bond finger disposed on the first surface, wherein the bond finger includes a copper substrate, and a gold surface finish above and on the copper substrate; and

a land pad for a ball attach on the second surface, wherein the land pad includes a copper substrate, and a gold surface finish below and on the copper substrate; and

an electronic device, wherein the electronic device is wire-bonded to the bond finger.

10. The package according to claim 9, wherein the gold surface finish includes a first plating layer above and on the metallization, and a second plating layer above and on the first plating layer, and wherein the gold surface finish is in a thickness range from about 0.01 μm to about 10 μm.

11. The package according to claim 9, wherein the package is disposed in one of a computer, a wireless communicator, a hand-held device, an automobile, a locomotive, an aircraft, a watercraft, and a spacecraft.

12. A process comprising:

electroless plating a metallic surface finish upon a metallization, wherein the metallization is a layout that is disposed upon a wire-bonding substrate including a first surface and a second surface, and wherein the metallic surface finish includes at least one of:

a bond finger disposed on the first surface; and

a land pad for a ball attach on the second surface.

13. The process according to claim 12, wherein electroless plating a metallic surface finish upon a metallization includes:

plating a first layer above and on the metallization, wherein the first layer is selected from gold, silver, platinum, iridium, and combinations thereof.

14. The process according to claim 12, wherein electroless plating a metallic surface finish upon a metallization includes:

plating a first layer above and on the metallization; and

plating a second layer above and on the first layer, wherein the second layer has an equal or greater electrochemical potential than the first layer, and wherein the second layer is selected from gold, silver, platinum, iridium, and combinations thereof.

15. The process according to claim 12, wherein electroless plating a metallic surface finish upon a metallization includes:

plating a first layer above and on the metallization, wherein the first layer is in a thickness range from about 10Å to about 10,000 Å; and

plating a second layer above and on the first layer, and wherein the metallic surface finish has an overall thickness in a range from about 0.01 μm to about 10 μm.

16. The process according to claim 12, wherein the metallization includes a copper metallization, wherein electroless plating a metallic surface finish upon a metallization includes:

plating a first layer above and on the metallization, wherein the first layer is selected from gold, gold alloy, silver, silver alloy, platinum, platinum alloy, iridium, iridium alloy, and combinations thereof, and

wherein the first layer is in a thickness range from about 10Å to about 10,000 Å; and

plating a second layer above and on the first layer, wherein the second layer has an equal or greater electrochemical potential than the first layer, and wherein the metallic surface finish has an overall thickness in a range from about 0.01 μm to about 10 μm.

17. A method comprising:

in a board layout array of wire-bonding substrates, *in situ* electrically testing a layout of an individual wire-bonding substrate.

18. The method according to claim 17, wherein testing includes simultaneously electrically testing more than one wire-bonding substrate.

19. The method according to claim 17, following testing, the method including:

rejecting and/or passing each board layout in the array; and

singulating each board layout from the array.

20. The method according to claim 17, following testing, the method including:

rejecting and/or passing each board layout in the array; and

wirebonding an electronic device to at least one board layout in the array.

21. The method according to claim 17, following testing, the method including:

rejecting and/or passing each board layout in the array;

wirebonding an electronic device to at least one board layout in the array; followed by

singulating each board layout from the array.

22. The method according to claim 17, following testing, the method including:

rejecting and/or passing each board layout in the array;

singulating each board layout from the array; followed by

wirebonding an electronic device to at least one board layout from the board layout array.

23. The method according to claim 17, following testing, the method including:

rejecting and/or passing each board layout in the array;

wirebonding an electronic device to at least one board layout in the array to form a package; and

installing the package in a computing system, wherein the computing system is selected from a computer, a wireless communicator, a hand-held device, an automobile, a locomotive, an aircraft, a watercraft, and a spacecraft.

24. The method according to claim 17, following testing, the method including:

wirebonding an electronic device to at least one board layout in the array; and

singulating each board layout from the array.

25. A computing system comprising:

a wire bonding substrate including a first surface and a second surface, wherein the wire bonding substrate includes at least one of:

a bond finger disposed on the first surface, wherein the bond finger includes a copper substrate, and a gold surface finish above and on the copper substrate;

a land pad for a ball attach on the second surface, wherein the land pad includes a copper substrate, and a gold surface finish below and on the copper substrate;

an electronic device, wherein the electronic device is wire-bonded to the bond finger or the land pad for a ball attach; and

at least one of an input device and an output device coupled to the electronic device.

26. The computing system according to claim 25, wherein the computing system is disposed in one of a computer, a wireless communicator, a hand-held device, an automobile, a locomotive, an aircraft, a watercraft, and a spacecraft.

27. The computing system according to claim 25, wherein the electronic device is selected from a data storage device, a digital signal processor, a micro controller, an application specific integrated circuit, and a microprocessor.